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REMARKS

The present invention relates to an improved chemical-mechanical polishing (CMP) slurry composition. Claims 1-16 are currently pending.

Claims 1-16 are rejected under U.S.C. 35 103(a) as allegedly being unpatentable over Small *et al.* (US 2003/0162398) in view of Sethuraman *et al.* (US 5,972,124). The Office Action of June 26 stated that Small *et al.* teaches an aqueous composition for CMP and a broad selection of abrasives including alumina, fumed alumina, and titania. The Office Action further stated that Small *et al.* teaches metal abrasive particles, which are catalysts, use of metal ions as catalysts, and a slurry comprising water having a pH of about 2-11. The Office Action pointed out that Small *et al.* fails to use the units of mmol/kg of ions as defined in applicant's claims 1, 2, 3, and 10. The Office Action asserted that it would have been obvious to one of ordinary skill in the art at the time of the invention to convert weight percentage into molarity, and that the conversion of the amounts disclosed by Small *et al.* would overlap the claimed concentrations. The present Office communication has cited an article by Ahmadi *et al.* to conclude that pieces of the metal coating would be liberated into the slurry and solubilize in the liquid, and form metal ions.

Applicants respectfully disagree. Small *et al.* teaches a composition for chemical mechanical polishing comprising abrasives having a surface at least partially coated by a metal catalyst. Small *et al.* teaches that the catalyst is absorbed onto at least a portion of the surface of the abrasive particle (see for example, paragraphs [0028] and [0044]). Small *et al.* offer no quantitative parameter for the metal catalyst. The only quantitative parameter given by Small *et al.* is that the catalyst at least partially coats an abrasive and that the abrasive plus catalyst is present at about 0.5wt %. No actual amount of the catalyst is taught, only the weight percent of the abrasive particle plus the absorbed catalyst. Small *et al.* also teach that the catalyst may coat from about 5 to about 100 percent of the surface of the abrasive particle (see paragraph [0028]), and that the abrasive particle is "more or less spherical and has an effective diameter of about 30 to about 170 nanometers," but gives no guidance to the surface area of the particle or the thickness of the coating. Applicants respectfully disagree with the assertion of the Office Action that Small *et al.* would overlap applicants' claimed concentration upon a unit conversion from wt%, because Small *et al.* does not teach the wt% of the metal catalyst.

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The Office Action cites an article by Ahmadi *et al.* as evidence that the metal catalyst coating of Small *et al.* would necessarily break off of the abrasive particle and dissolve in the aqueous slurry, thereby creating the metal ions of the present invention. The Office Action asserts that it would be obvious to one of skill in the art at the time of the invention, that surface particles from the abrasive would be liberated into the slurry and solubilize in the liquid, comprising water, to form the presence of metal ions. However, the Ahmadi *et al.* reference apparently teaches that in abrasive and adhesive wear "small patches of material fragments will be transferred from the softer material to the surface of the harder material as shown schematically in Figure 19." Assuming *arguendo* that the metal catalyst coating of Small *et al.* was to fracture from the abrasive particle, it would adhere to the surface of the substrate and not be part of the liquid fraction. The Small *et al.* reference combined with Ahmadi *et al.* provide no teaching or suggestion of calcium, strontium or barium ions in a liquid carrier.

In conclusion, Small *et al.*, either alone or when combined with the other cited references, fails to teach both (a) the claimed metal ions and (b) an ion concentration of about 0.5 to about 50 mmol/kg.

The applicants believe that the application is in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned agent.

Respectfully submitted,

By


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